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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/805,620	03/13/2001	Craig M. Carpenter	MI22-1563	3004
21567	7590	03/10/2004	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			FULLER, ERIC B	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/805,620

Applicant(s)

CARPENTER ET AL. 

Examiner

Eric B Fuller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 1-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) 1-39 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-21, drawn to a chemical vapor deposition apparatus, classified in class 118, subclass 715.
- II. Claims 22-37, drawn to a chemical vapor deposition method, classified in class 427, subclass 248.1.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus may be used to practice another and materially different process, such as etching the substrate.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

During a telephone conversation with James Lake on March 1, 2004, a provisional election was made without traverse to prosecute the invention of Group II, claims 22-37. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 28 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 28, "delivering less than a substantial amount of purge material" is vague and accordingly renders the scope of the claims confusing.

Claim 29 is confusing, particularly around the phrase "to a second of the chamber walls".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 22-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al. (US 5,755,886).

Wang teaches a CVD process where an annular, concentric purge curtain is fed into the chamber, around the periphery of the substrate and along the chamber walls, while the process gas is being injected over the substrate (column 10, lines 40-46). The curtain extends downward from above the substrate holder (figures). Figure 10, line 107, shows the purge curtain flowing past the substrate holder. Column 13, lines 1-10, reads on the flow diverter. The aspects of the lid are read on in column 6, lines 60-67. All other limitations may be found in the section starting on column 12, line 43, and ending on column 13, line 39.

Claims 22-31 and 33-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohashi et al. (US 6,059,885).

Ohashi teaches a CVD process where an annular, concentric purge curtain is fed into the chamber, around the periphery of the substrate and along the chamber walls, while the process gas is being injected over the substrate (column 18, lines 28-67). The curtain extends downward from above the substrate holder (figures 7 and 8). Figure 7 shows the purge curtain flowing past the substrate holder. The aspects of the lid are read on in the figures. The process prevents particles from adhering to the walls of the chamber by eliminating dead spaces by filling them with a purge curtain (column 2, lines 25-43). All other limitations may be found in column 18, lines 28-67, and figures 7 and 8.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 5,755,886), as applied to claim 27 above, and further in view of DiMeo, Jr. et al. (US 5,972,430).

Wang teaches the limitations of claim 27, but fails to explicitly teach ceasing flow of the precursor and flowing purge gas through the process ports. The reference is open to many different types of CVD processes, including multi-step processes (abstract). Dimeo teaches that for multi-step CVD processes, it is desirable to purge the

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process gas lines and chamber in order to separate the process gases (column 5, lines 1-25). By doing so, premature reactions and contamination are eliminated. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use purging through the gas lines and chamber in the process taught by Wang, as it is open to multi-step processes. By doing so, premature reactions and contamination are eliminated.

As to claims 37 and 39, Wang teaches that the curtain is used to keep the gas being injected from reaching the chamber walls. One of skill would recognize that it would also remove particles that have reached the wall. To minimize the amount of purge gas would have been obvious at the time the invention was made to a person having ordinary skill in the art. By doing so, less purge gas is required. To determine the amount of purge gas in the curtain for the purge and deposition steps, if any at all, would have been within the skill of one practicing in the art, through routine experimentation.

Claims 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiMeo, Jr. et al. (US 6,972,430) in view of Ohashi et al. (US 6,059,885).

DiMeo teaches a digital CVD method that uses purge to eliminate process gases from the chamber between steps (column 5, lines 1-25). The reference is silent to using a purge curtain. However, Ohashi teaches that by providing a purge curtain, particles are prevented from adhering to the chamber walls (column 2, lines 25-40). It would have been obvious at the time the invention was made to a person having ordinary skill

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in the art to use a purge curtain, as taught by Ohashi, in the process taught by DiMeo.

By doing so, particles are prevented from adhering to the walls of the chamber.

As to claim 37, Figures 1a-1d and figure 4, teach the flow profiles that should be used when only one gas is being supplied to the chamber.

As to claim 39, Ohashi teaches that the purge curtain prevents adhering of particles to the wall. One of skill would recognize that it would also remove particles that are all ready adhered to the wall. To minimize the amount of purge gas would have been obvious at the time the invention was made to a person having ordinary skill in the art. By doing so, less purge gas is required. To determine the amount of purge gas in the curtain for the purge and deposition steps, if any at all, would have been within the skill of one practicing in the art, through routine experimentation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B Fuller whose telephone number is (571) 272-1420. The examiner can normally be reached on Mondays through Thursdays.

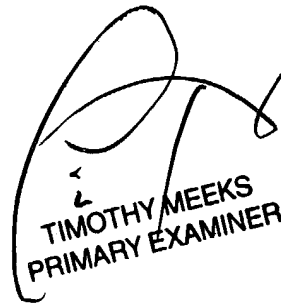
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck, can be reached at (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



EBF



TIMOTHY MEEKS
PRIMARY EXAMINER